NPAG DATA: *CUSCUTA JAPONICA*
JAPANESE DODDER

Draft - November 1, 2001

TAXONOMY:

Phylum:	Embryophyta
Class:	Dicotyledoneae
Order:	Polemoniales
Family:	Cuscutaceae

According to some sources (Gleason & Cronquist, 1963; Reed & Hughes, 1977), the Genus *Cuscuta* is in the Family Convolvulaceae.

Full Name:	*Cuscuta japonica* Choisy
Synonyms:	*Monogynella japonica* (Hadac & Chrtek, 1970)
Common Name:	Japanese dodder (Clemson, 2001)

US DETECTION DATA:

Location:	Houston, TX (Near but *not* in Wholesale Nursery - US Trees)
Date:	Unspecified date of initial collection
Host:	(Possibly weeds near fence)
Collector:	Cynthia Heintze, IPM Coordinator, Field and Fleet Operations Houston Parks and Recreation, 2999 S. Wayside Houston, TX 77023 (713) 742-1413
Initial Identifier:	Rodney Young, USDA-APHIS-PPQ Bldg. 580, BARC-E Beltsville, MD 20705 (301) 504-8605
Confirming Identifier:	Dr. Lytton Musselman, Department of Biological Sciences Old Dominion University Norfolk, VA 23529-0266
Iden. Date:	2001(?)

Note: Subsequent detections (data is uncertain) are in the immediate area:

• Hobby Area	Apartment ornamental beds	Contact: Dea Clemons
• Hobby Area	Broadway	McDonald's and Walgreen's
• Hobby Area	Bellfort and Glenn Valley	
• SE of Hobby Area	9738 Buena Park	

species. Potato and eggplant, on which this dodder showed moderate growth, were among the crop species. This dodder showed moderate, though limited, vigor on pumpkin, *Cucurbita moschata.* On soybeans, this dodder was relatively weak (Zaroug & Ito, 1988).

According to various sources, this dodder parasitizes the following species:

Cucurbita moschata	Pumpkin	Zaroug & Ito,1988 (Moderate vigor)
Glycine max	Soybean	Zaroug & Ito,1988 (Limited vigor)
Nicotiana tabacum	Tobacco	Cui, Li, and Hua, 1999; Liu, 1992
Pueraria lobata	Kudzu	Clemson Univ., 2001
Salix purpurea	Purple osier	Huang *et al.*, 1991
Solanum melongena	Eggplant	Parker & Riches, 1993; Zaroug & Ito,1988
Solanum tuberosum	Potato	Parker & Riches, 1993; Zaroug & Ito,1988

According to various sources, this dodder does *not* parasitize the following species:

Cucumis sativus	Cucumber	Parker & Riches, 1993; Zaroug & Ito,1988
Lycopersicon esculentum	Tomato	Parker & Riches, 1993; Zaroug & Ito,1988
Pisum sativum	Pea	Parker & Riches, 1993; Zaroug & Ito,1988
Trifolium pratense	Clover	Parker & Riches, 1993; Zaroug & Ito,1988
Zea mays	Maize	Zaroug & Ito,1988 (5-7 day survival)

DISTRIBUTION:

Europe: France (Holm *et al.*, 1979) (Possibly eradicated)
Asia: China (incl. Hong Kong, Manchuria, Taiwan), Korea, Japan, Russia (Amur, E. Siberia) (Liao, Chen, & Kuoh, 2000; Reed & Hughes, 1977)
N. America: U. S. A. (Introduced: TX)

Note: After being introducted to several States, this dodder was eradicated: FL, SC, TX (Do Reed & Hughes, 1977, indicate a US infestation? Also see Floridata, 2001.)

DAMAGE WHERE ESTABLISHED:

Parker and Riches (1993) include this dodder in their listing of "The Main *Cuscuta* Species." In their discussion on *Cuscuta japonica*, they note that this dodder is "locally important in China and Japan, but not well documented."

Reed and Hughes (1977) mark the Japanese occurrence of *Cuscuta japonica* with an asterisk which indicates a serious weed undergoing control efforts.

Based on its range in the Orient, this dodder should be able to survive in all of the eastern United States, which is mostly in the Warm Temperate Climatic Zone and in the Typical Temperate Climatic Zone in the eastern United States. (See accompanying maps.)

Suitable Hosts: Host crops of this dodder are commonly grown in the United States (*see* Hosts). Many native plants are in the genera named.

Common weeds will probably serve as hosts. As one example, kudzu (*Pueraria lobata*) is a known host (Clemson Univ., 2001). As another example, because eggplant, potato, and tobacco are hosts (Liu, 1992; Parker & Richie, 1993) and all in the Family Solanaceae, there is a possibility that perennial species in the Family Solanaceae may serve as overwintering wild hosts. At least ten species of *Solanum* are native to the United States (Gleason & Cronquist, 1963):

Solanum dulcamara	Bittersweet	From Eurasia; naturalized in northeastern US; perennial
S. nigrum	Black nightshade	Cosmopolitan
S. sarrachoides		Native of South America; widely introduced
S. triflorum		Native of western United States
S. jamesii	Wild potato	Native of southwestern United States; perennial
S. rostratum	Buffalo-bur	Native of Great Plains; introduced westward
S. citrullifolium		Native of United States; Iowa and Kansas to Mexico
S. sisymbriifolium		Native of South America; weed in southern US
S. carolinense	Horse-nettle	Native of southeastern US, now widespread; perennial
S. elaeagnifolium	Wild potato	MO and KS to TX and AZ; perennial

According to Gleason and Cronquist (1963), other species in the Family Solanaceae are found in the northeastern United States: one species in *Nicandra*, ten species in *Physalis*, one species in *Lycium*, one species in *Hyoscyamus*, two species in *Datura*, one species in *Nicotiana*, two species in *Petunia*.

Host Range: Chrtek & Osbornova (1991) note that most dodder species are not strictly confined to a particular taxonomical, morphological, or ecological group of plants. Apparently, this is the case with this dodder. (*See* Hosts.)

Identification Problems: Seed characteristics are not distinct enough to permit easy determination of species within *Cuscuta* (Knepper *et al.*, 1990). The species of *Cuscuta* are cosmopolitan and difficult to distinguish through identification of seed or stem propagules; therefore, all should be prohibited entry into the United States (Ritchie, 1981). (Is this the standard operating policy at the ports?)

Use as a Herb: *Cuscuta japonica* is frequently mentioned as a medicinal herb (Floridata, 2001; Medboo, 2001). The (viable?) seeds of Japanese dodder may be sold under various name: "Semen Cuscutae," "Dodder Seed Semen," "Cuscutae,"or "Tu Si Zi"(Healthlink, 2001; Medboo, 2001).

According to the Medboo (2001) website, this herb is the ripe seed of *Cuscuta chinensis* Lam. or *C. japonica* Choisy, annual parasitic herbs of the Family Convolvulaceae. The seed is collected in autumn after ripening, dried in the sun, and used unprepared or boiled after the removal of impurities. Sweet in flavor, warm in nature, the herb acts on the liver, kidney, and spleen meridians. Being sweet, moist, and warm in nature, it functions in tonifying (?) both kidney yang and yin, nourishing the liver, and improving vision.

Dodder as a Vector of Pathogens: *Cuscuta japonica* has been used to transfer plant pathogens from one host to another (Zhang *et al.*, 1991). However, this transfer of pathogens may only be a minor problem in the field.